REV	REASON

COAXICON* MICROMINIATURE R.F. COAXIAL CONTACTS

ENGINEERING RELEASE DATE
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APPROVAL
JESS CABARLO

1. INTRODUCTION

This specification covers requirements for application of COAXICON Microminiature R.F. Coaxial Contacts. The contacts are used in a variety of connector housings, including certain housings for AMP* 750 Series and 1000 Series Box Connectors, AMP Mini-Box Connectors, and a specially designed AMP M Series connector pair.

Contact designs include two printed circuit (pc) board and three crimped-to-cable versions. Pin contacts fit into headers, or plug housings, and socket contacts fit receptacle housings (in M Series housings the female housings are considered plugs; the male housings, receptacles). The combined capabilities of the contacts and connectors allow cable-to-board, cable-to-cable, and board-to-board applications.

NOTE

All dimensions are given in inches with an applied tolerance of ±.005 unless otherwise specified. Metric equivalents (millimeters) may be obtained by multiplying the dimensions and tolerances by 25.4 and rounding to the nearest hundredth.

Terms used in Figure 1 to identify product features are used throughout this specification.

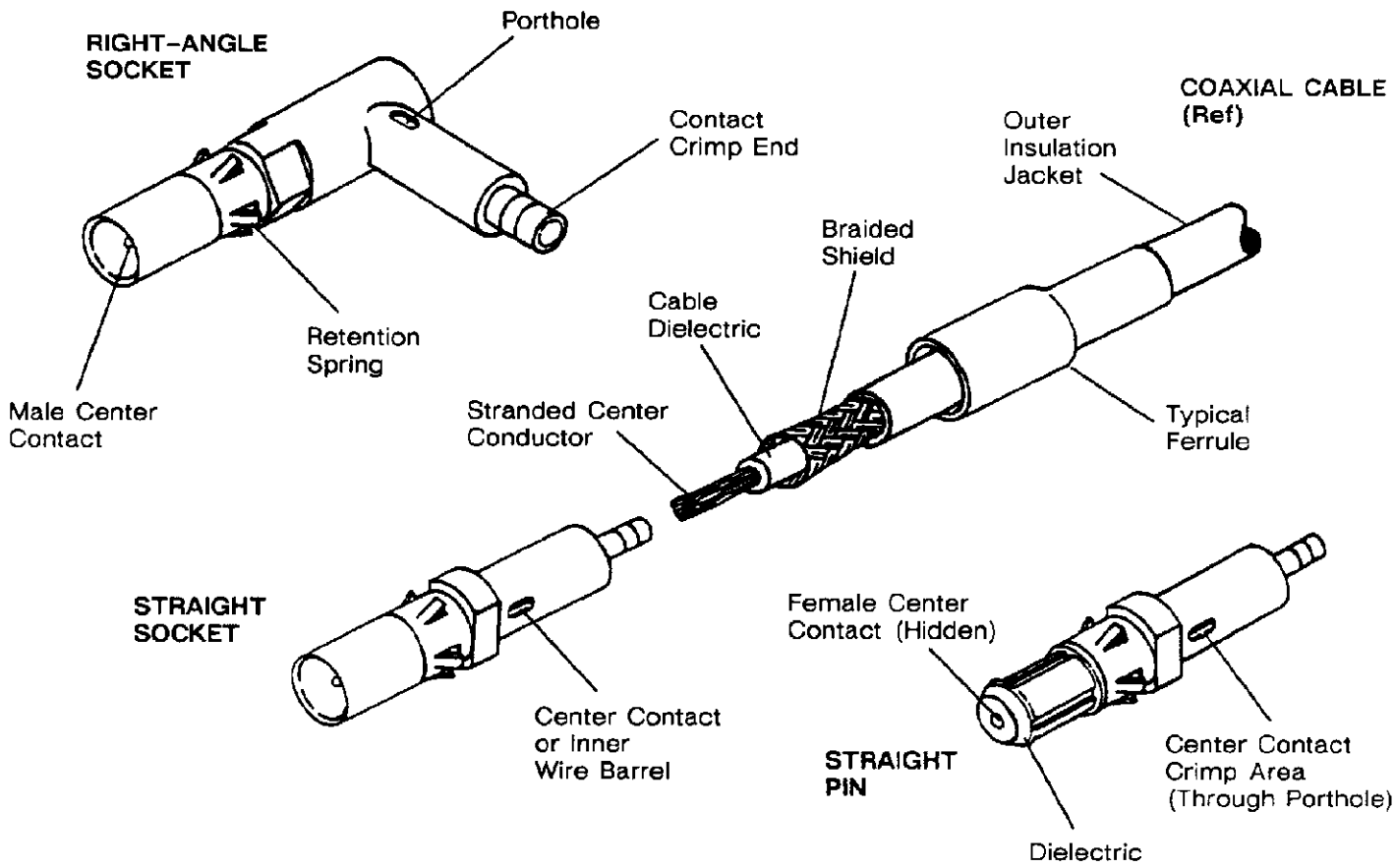

Fig. 1. Product Features (cont'd next page)

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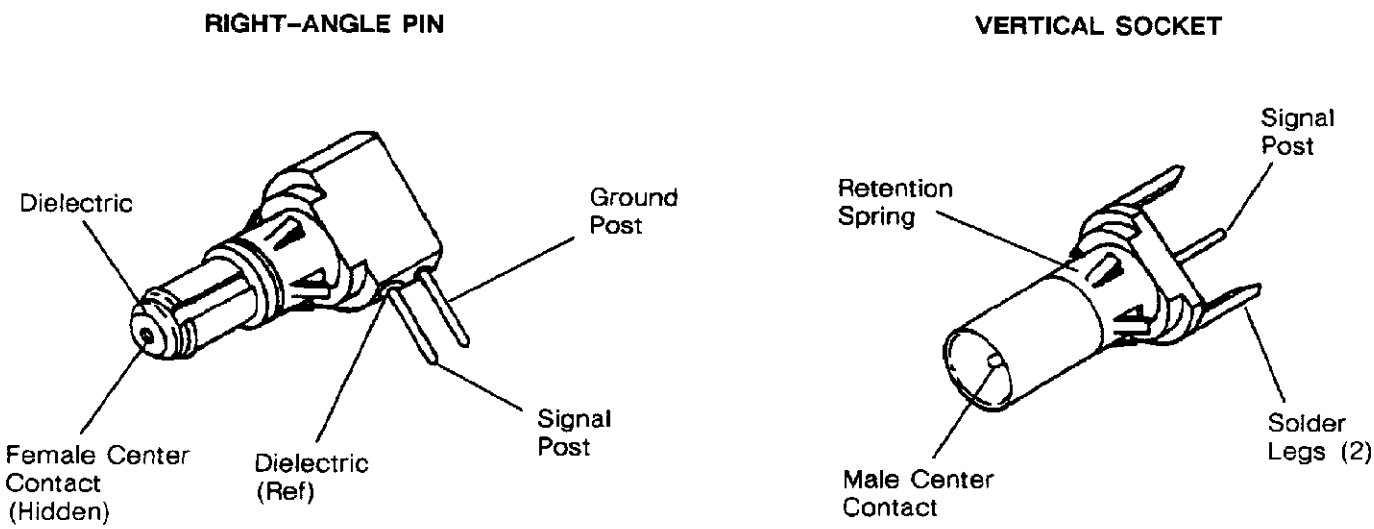


Fig. 1. Product Features (end)

2. REFERENCE MATERIAL

2.1. Customer Assistance

A. Tooling and Application Information

REF PART NO. 227602 and PRODUCT CODE 3349 are representative numbers which identify the COAXICON Microminiature R.F. Coaxial Contacts. These numbers are used by a network of AMP customer service people to access tooling and product application information. This service is provided before the purchase by your local AMP representative (Field Sales Engineer, Field Applications Engineer, etc) or, after the purchase, by calling the CUSTOMER HOTLINE number at the top of page 1.

B. Product and Part Number Information

Your local AMP representative should be able to answer your product questions, or will contact the appropriate information source for you.

2.2. Engineering Drawings

Customer Drawings for specific products are available from the responsible AMP Engineering department via the appropriate service network source (See paragraph 2.1). The information contained in Customer Drawings takes priority if there is a conflict with this document or with any other technical documentation supplied by AMP Incorporated.

2.3. Bulletins

AMP Corporate Bulletin No. 52 outlines recommended soldering techniques, and contains problem-solving information to aid soldering technicians.

2.4. Specifications

AMP Product Specification 108-12049 covers the performance, tests, and quality requirements for multiple COAXICON Microminiature R.F. Coaxial Contacts for use in special cavities of pc board connectors and panel-mounted connectors.

2.5. Technical Publications

A. AMP Instruction Sheet IS 6748 provides information on the use and maintenance of hand-held crimp tooling. (See Section 4, TOOLING TYPES, for more information.)

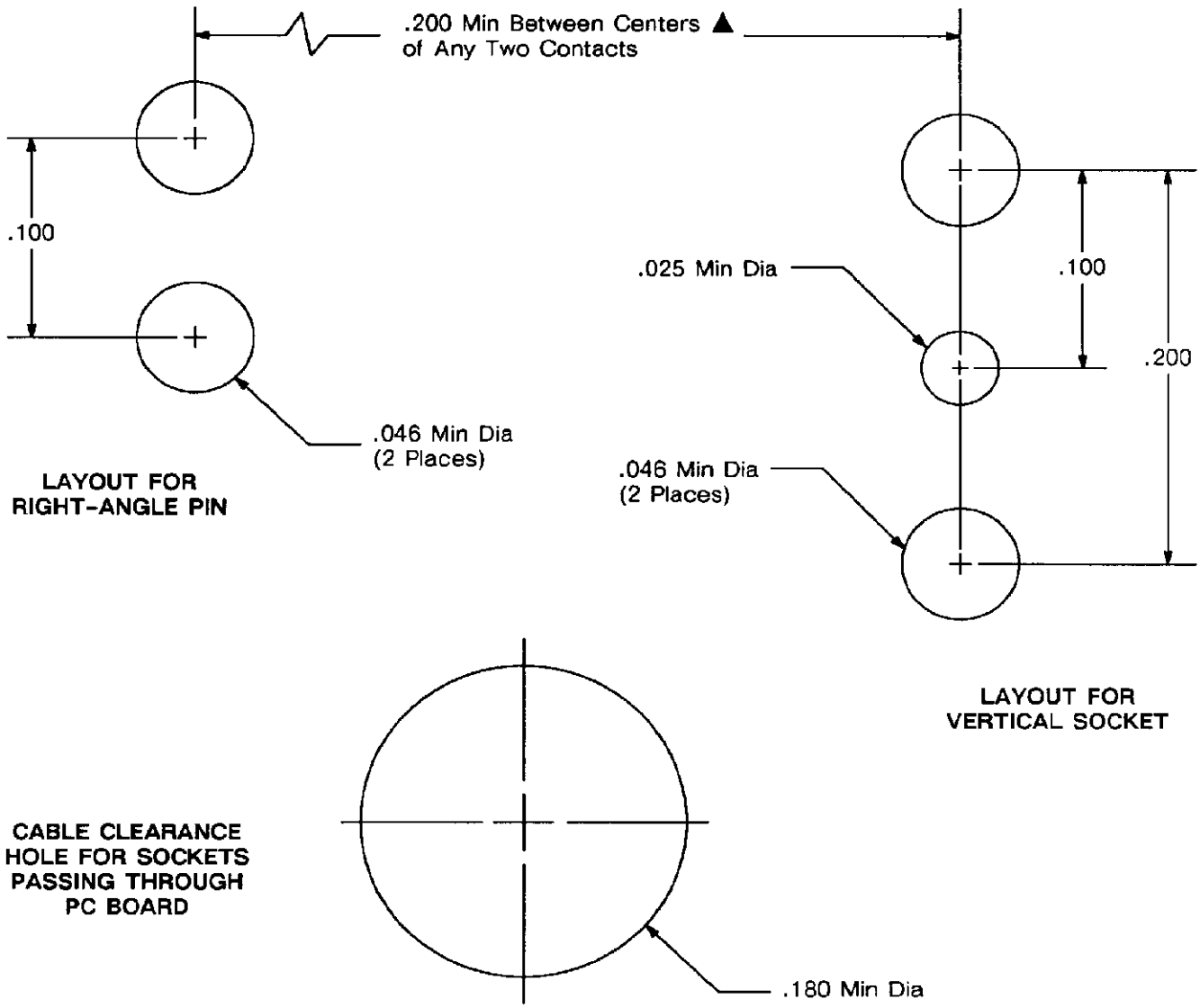
B. AMP Instruction Sheet IS 2923 covers contact extraction tooling and procedures for using the tool in repair of connectors or replacement of damaged contacts.

3. REQUIREMENTS

3.1. PC Board Requirements

A. Board thickness may be no less than .062 and no more than .125.

B. Board layout shall be as shown in Figure 2.



▲ When contacts are used in board-mounted connectors, refer to the AMP Customer Drawing for the specific connector used, to obtain measurements between contacts.

Fig. 2. PC Board Layout

3.2. PC Board Contact Seating

Seated pc board contacts shall meet the requirements of Figure 3.

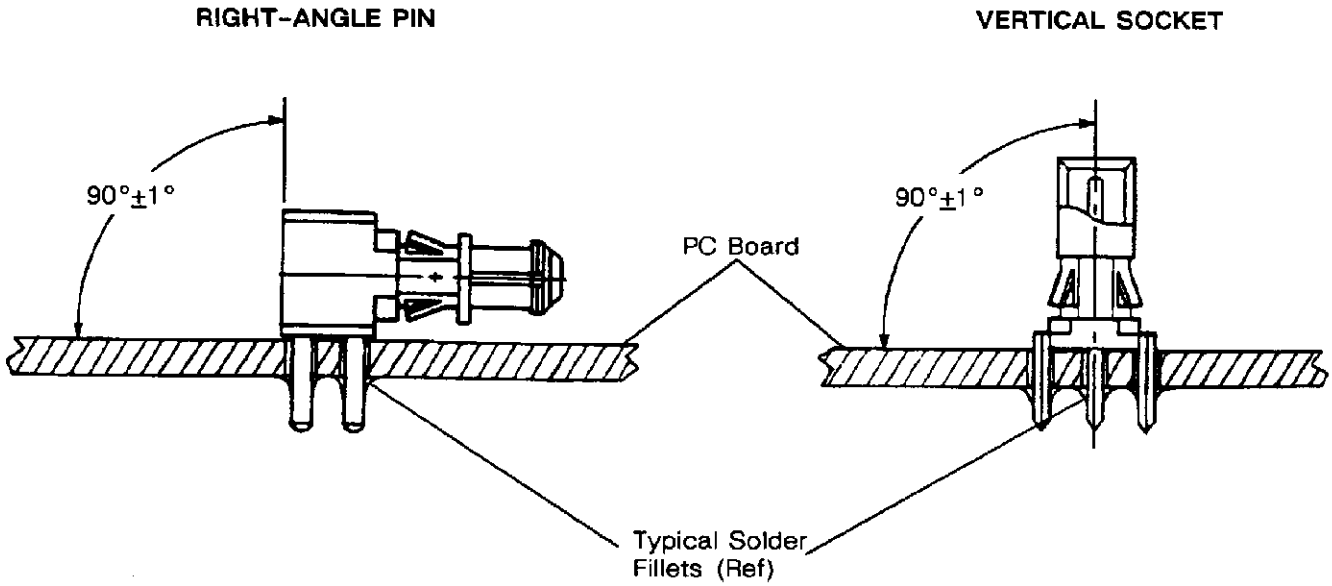


Fig. 3. Seated Contact Requirements

3.3. Cleaning, Drying, and Soldering

A. Solder legs shall be fluxed before soldering using an activated rosin base flux. Proper flux selection depends on the type of printed circuit board and any components already mounted. Flux must also be compatible with the flow solder line and with manufacturing and safety requirements.

B. Removal of fluxes, residues, and activators is mandatory. Cleaning procedures are chosen by the customer and depend on the type of flux used on the solder line.

DANGER *AVOID PERSONAL INJURY! Always pay strict attention to recommendations of the solvent manufacturer regarding toxicity and other safety requirements.*

C. When drying cleaned assemblies and pc boards, make certain that recommended temperature limits are not exceeded.

CAUTION *Excessive temperatures may cause damage to the connector housings.*

D. When contacts are used with housings in board-to-board applications, it is important to maintain proper mating alignment. This can best be accomplished by one of two recommended methods:

1. NOT FOR USE WITH VAPOR-PHASE SOLDERING — Create a dummy pc board by inserting Vertical Socket contacts into a receptacle housing like those to be used in production. Insert AMP Alignment Ring 222000-1 (IS 9344) into each contact cavity to align sockets. Solder sockets to board. This receptacle connector now can be used as an alignment fixture for soldering mating pin headers.

2. VAPOR-PHASE SOLDERING — Since the alignment rings used in method 1 are nylon which will not withstand vapor-phase soldering, special fixtures should be manufactured to align pin and socket contacts. Dimensioning will depend on the specific housings used, and should be designed in coordination with the AMP Engineering department responsible for the housings.

E. AMP Corporate Bulletin No. 52 is available upon request and can be used as a guide in soldering. This bulletin gives various flux types and characteristics along with commercial designation and flux removal procedures. A checklist is attached to the bulletin to aid in obtaining information pertaining to soldering problems.

3.4. Cable Selection and Preparation

A. Select cable according to Military Specification MIL-C-17. A partial listing of acceptable equivalents follows:

Belden 9221 ●	RG-178/U (Double Braid)	RG-196/U
Gore CXN-1644 †	RG-179/U	RG-316/U
Malco 250-3908-0000 ■	RG-187/U	RG-316/U (Double Braid)
RG-174/U ◆	RG-188/U	Tensolite 30850/81T-1 ‡

B. Figure 4 shows cable stripping dimensions.

NOTE

DO NOT nick or cut the center conductor or braid when stripping the cable. After cable is stripped, center conductor strands should be twisted tightly together to eliminate loose wire strands.

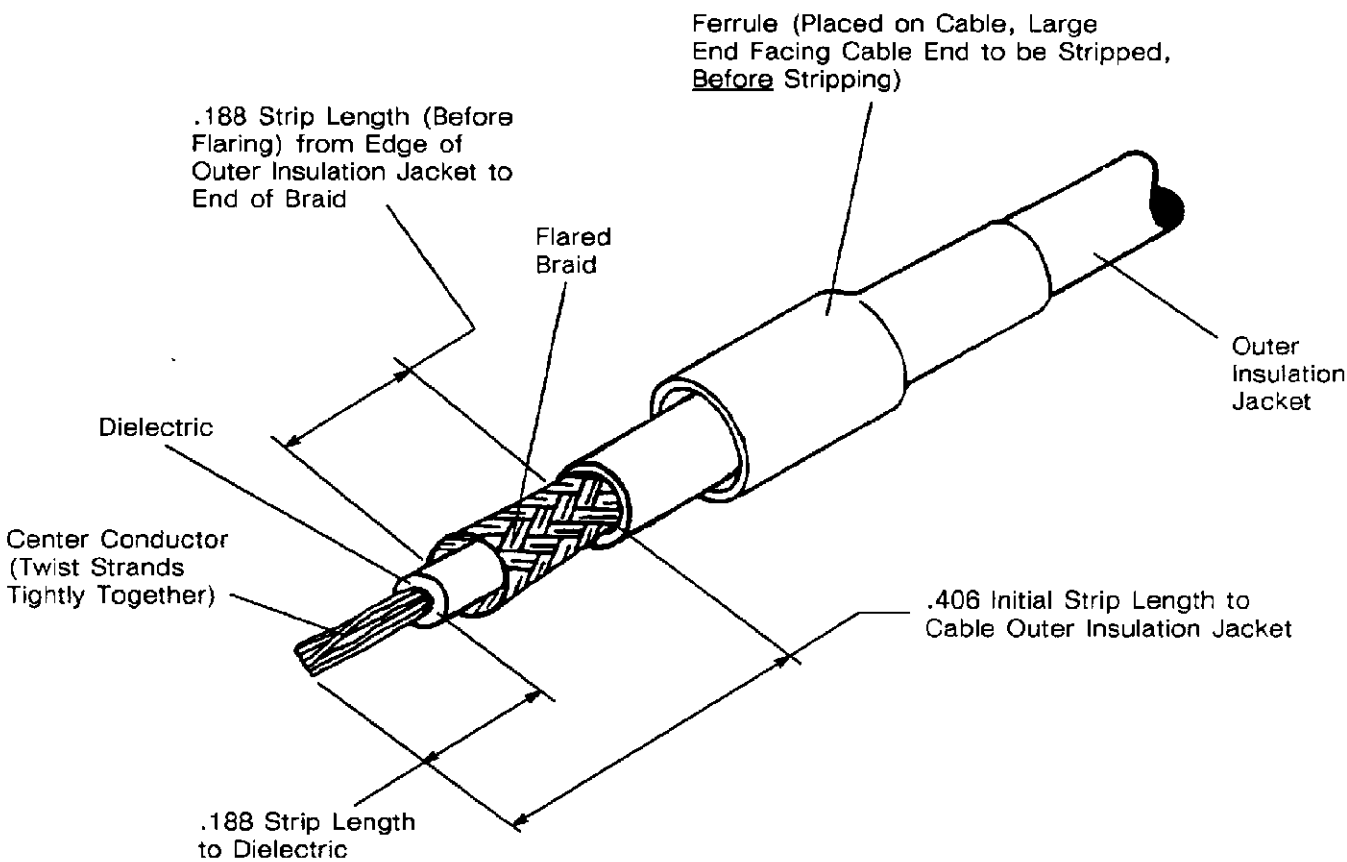


Fig. 4. Cable Stripping Dimensions

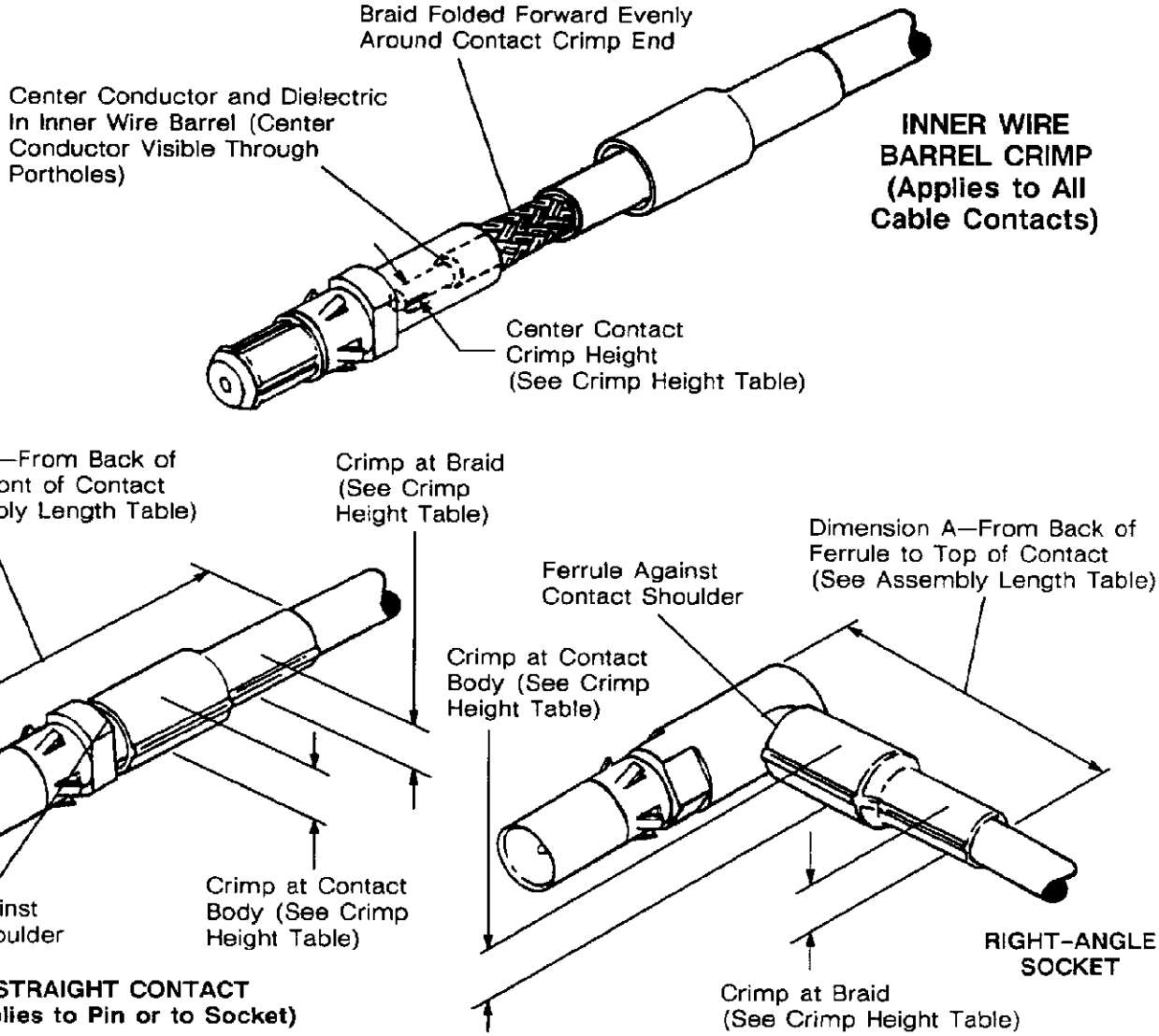
● Product of Belden Corporation
† Product of W.L. Gore & Associates, Inc.
■ Product of Malco, a division of Microdot Inc.
◆ Standard military designation
‡ Product of Tensolite Co., a division of Carlisle Corp.

3.5. Contact Crimp Requirements

A. Cable dielectric and center conductor must be fully inserted with the dielectric bottomed in the inner wire barrel before crimping the inner wire barrel.

B. Braid should be over and evenly distributed around crimp end of contact body. Ferrule must be fully seated over braid and positioned flush against the contact shoulder. Crimp according to the instructional material packaged with the hand tool.

C. Figure 5 shows properly crimped inner wire barrel (center contact) and ferrule (cable braid and contact body).



FERRULE CRIMP

CRIMP HEIGHT TABLE

TOOL NO. ▲	CENTER-CONTACT CRIMP	FERRULE CRIMP	
		LARGE END (AT CONTACT BODY)	SMALL END (AT BRAID)
220215-1	.091 - .098	.0230 - .0275	.139 - .147
220215-2	.112 - .119		

ASSEMBLY LENGTH TABLE

CONTACT TYPE	DIMENSION A (MAX)
Straight Pin	.921
Straight Socket	.916
Right-Angle Socket	.700

▲ Tool number is determined by the cable you use (See the table in paragraph 4.2, page 7).

Fig. 5. Crimped Contact Requirements

3.6. Wire Bend Allowance

It is important not to restrict contacts in any way that may adversely affect the wire dress of the cable. AMP Engineering recommends that individual cables should be dressed to a bend radius of at least ten times the cable outside diameter. Likewise, cable bundles should be dressed to a bend radius of at least ten times the diameter of the bundle.

3.7. Repairability

Contacts can be easily removed from snap-in type housings using AMP Extraction Tool No. 220216-1 (See IS 2923).

4. TOOLING TYPES

4.1. Solder Contact Tooling

Contacts generally are placed by hand for soldering applications. However, when used in connectors for board-to-board applications, a fixture may be needed to ensure proper alignment. Recommended fixturing methods are discussed in paragraph 3.3.D, page 4 of this document.

4.2. Crimp Contact Tooling

Crimp-type contacts are applied to coaxial cable using AMP Hand Crimping Tools with base part no. 220215 (IS 6748). The following table lists particular cables along with the dash no. of the hand tool used to apply them.

CABLE TYPE	HAND TOOL NUMBER
RG-178/U (Double Braid) RG-196/U Malco 250-3908-0000 Tensolite 30850/81T-1	220215-1
Belden 9221 Gore CXN-1644 RG-174/U RG-179/U RG-187/U RG-188/U RG-316/U RG-316/U (Double Braid)	220215-2

5. VISUAL AID

Figure 6 is to be used by production personnel to ensure a properly applied product. Applications which are NOT visually correct should be inspected using the information in the main body of this specification and in the instructional material shipped with the product or tooling.

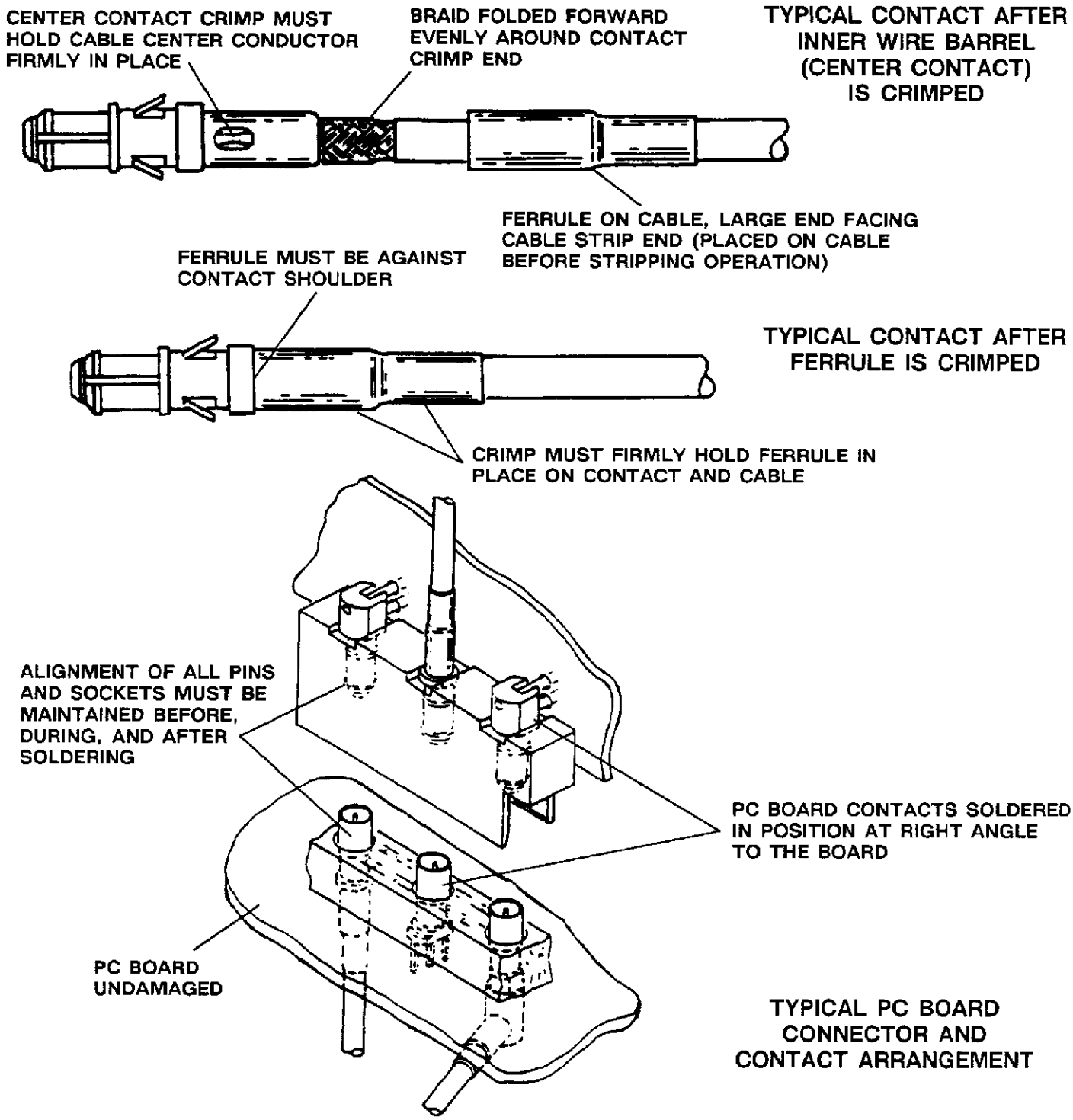


FIG. 6. VISUAL AID